one or more contact centers each with its own operating hours and time zones, comprising the steps of:

(a) acquiring net staffing level requirements for each contact type, and for each period to be scheduled by any means;

(b) acquiring tour, shift, days-off, and break scheduling rules, agent skills groups, agent availability, and objective criterion to be optimized and its parameters by any means;

(c) formulating the constraints and objective function of a Mixed Integer Programming (MILP) model to describe the tour and shift rules, staffing level requirements for a plurality of contact types and for each period to be scheduled, agent skills, agent availability, and agent costs;

(d) solving the LP relaxation of the MILP model formulated in the B&C algorithm, and stopping the B&C algorithm if an optimal solution to the MILP model is found;

(e) calling the RA algorithm comprising of the following steps if a solution to a node violating some integrality constraints is found by the B&C algorithm:

i. Obtaining the values of the decision variables in the solution found to the MILP model;

ii. Rounding the fractional values of decision variables U, W, V, QX, QU, QW, QV, and G down, and weekly tour variables X, and work pattern variables down if their fractional part is less than or equal to 0.50, and up if greater than 0.50, provided the agent availability constraints on the maximum number of agents available are not violated;

iii. Scheduling additional days off by increasing the values of Y and Z if additional days off needed to satisfy tour scheduling requirements, and additional daily shifts to have a shift scheduled for every agent who will be working on a given day based of the work patterns scheduled;

iv. Scheduling additional daily breaks if the number of breaks of each type is not sufficient to satisfy break scheduling rules for a tour, and unscheduling breaks if more breaks are scheduled due to rounding;

v. Computing agent shortages and excesses for each contact type and planning period;

vi. Computing scheduled agent availability for all agent groups, comparing them with the agent allocations to different contact types by the rounded values of allocation variables G, and adjusting the values of the associated allocation variables to make agent allocations equal to scheduled agent availability;

vii. Checking the solution constructed in steps (a) through (f) to find out if all agent requirements are met in every period and , when all requirements are met, eliminating all redundant agent tours and stopping with the integer feasible solution found;

viii. Stopping with a solution with agent shortages if agent requirements for some contact types are not met in all periods and all available agents who can serve these contact types are scheduled;

ix. Continuing to step (i) if there are agents available to schedule and there shortages in some periods for some contact types;

x. Finding all periods in which some contact types have shortages, finding an agent with skills needed together with a complete tour schedule with work and non-work days, daily shift start times and shift lengths, daily break times to reduce the agent shortages, and adding to the solution by updating the values of the decision variables to include the newly found tour schedule;

xi. Repeating steps (viii), (ix), and (x) until an integer feasible solution satisfying all requirements is found or the algorithm stops in step (viii);

xii. Examining the tours scheduled in the integer feasible solution found and eliminating redundant tours

(f) applying the RA algorithm to the solution found for the current node by the B&C algorithm, and passing it to the B&C algorithm if a solution better than the best integer solution known by the RA algorithm is found;

2. The method of claim 1 further comprising of repeating steps (e) and (f) for every node the B&C algorithm solves and finds a solution violating only some integrality constraints, until a terminal solution to the MILP model is reached.

3. The method of claim 1 further comprising of processing the terminal solution found to assign daily shifts with start times and shift lengths to work patterns, and days-off scheduled to tours, and daily breaks to specific shifts to develop detailed weekly agent schedules;

4. The method of claim 1 further comprising of assigning agents to detailed weekly tours;

5. The method of claim 1, in which a terminal solution to the MILP model formulated is found when the objective function value for an integer feasible solution differs no more than a pre-specified percentage from the best lower bound found in the B&C algorithm for the MILP model.

6. The method of claim 1, in which a terminal solution to the MILP model formulated is found when an integer feasible solution is found and a pre-specified period of time is passed.

7. The method of claim 1, in which a terminal solution to the MILP model formulated is found when an integer feasible solution is found and a pre-specified number of nodes are solved in the B&C algorithm.

8. A computer program in a computer readable medium to be run on a computer for developing optimal schedules for a plurality of agents with a combination of defined skills, a plurality of contact types requiring defined agent skills, a plurality of tour and shift scheduling rules, and a plurality of contact centers, comprising of:

means for acquiring agent and skill requirements for each period to be scheduled;

means for acquiring, for each contact center to be scheduled, operating hours, agent skill groups, and scheduling paradigm for contact centers to specify whether each center is to be scheduled independently or a plurality of contact centers as a virtual contact center with combined;

means for acquiring tour and shift parameters and scheduling rules, and their availability to agent skills and work groups at different contact centers;

means for acquiring the objective criterion to be optimized and objective function

parameters to quantify cost or benefit;

means for generating an MILP model by defining decision variables, parameters and sets, and then formulating the objective function, agent and skill requirement constraints, breaks constraints, days-off and work pattern constraints, agent availability constraints, other schedule related constraints, and non-negativity and integrality constraints;

means for solving the MILP model using an optimization algorithm;

means for generating a detailed tour schedule using a terminal solution to the MILP model found by assigning daily shifts to work patterns scheduled, days-off to weekly tours, and breaks to daily shifts;

means for assigning agents to specific tours.